

### **REMARKS**

Claims 1-3, 5-12 and 15-23 are now pending in the application. The Examiner has withdrawn Claims 24-29 and 31-50 from consideration.

Claims 1 and 20 have been amended to more particularly point out and distinctly claim the invention. Support for the amendment to independent Claim 1 can be found throughout Applicants' specification as originally filed, and at Paragraphs 31 and 39, for example. Similarly, support for the amendment to Claim 20 is found at previously amended Paragraph 55. The Examiner is respectfully requested to reconsider and withdraw the rejection(s) in view of the amendments and remarks contained herein.

### **REJECTION UNDER 35 U.S.C. § 112**

Claim 20 stands rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point and distinctly claim the subject matter which Applicants regard as the invention. Specifically, Claim 20 is rejected in that the reference of a trademark name, ICONEL, renders the claim indefinite. This rejection is respectfully traversed.

Claim 20 has been amended to recite a liquid distribution media that comprises a plurality of conductive metal particles selected from the group consisting of: stainless steel, niobium, nickel-chromium-iron alloy, and mixtures thereof, where the term "INCONEL" has been substituted for a generic description of "nickel-chromium-iron alloys," as is well recognized by those of skill in the art. In light of this amendment, Applicants respectfully submit that Claim 20 is not indefinite under §112 and request reconsideration thereof.

**REJECTION UNDER 35 U.S.C. § 103 OVER MIYAZAWA IN VIEW OF YAMADA**

Claims 1-3, 5-21 and 23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Miyazawa et al. (U.S. Pat. Pub. No. 2003/0235735) (hereinafter the “Miyazawa” reference) in view of Yamada (U.S. Pat. No. 5,432,023) (hereinafter the “Yamada” reference). This rejection is respectfully traversed.

Independent Claim 1 has been amended to clarify the claimed invention and now recites that the liquid distribution media is electrically conductive.

Independent Claim 1 recites, *inter alia*, a fluid distribution layer that is porous and has an average pore size larger than an average pore size of the liquid distribution media. The Miyazawa reference does not suggest a liquid distribution media that has an average pore size that is less than an average pore size of the fluid distribution layer, *i.e.*, that the fluid distribution layer has an average pore size that is larger than that of the liquid distribution media. While Miyazawa discloses a porous rib, it has no suggestion or motivation to provide any specific average pore size, as compared to the average pore size of a fluid distribution layer. Hence, there is no suggestion or motivation to select a smaller average pore size for the liquid distribution media than for the fluid distribution layer. Further, Miyazawa is silent regarding electrical conductivity of the ribs. Miyazawa only specifies that the ribs should have a low thermal conductivity, presumably an insulating type material that would likewise have a low electrical conductivity. See for example, Paragraph 29.

The Yamada reference relates to liquid-fuel based fuel cells that can contain a porous separator plate and/or wicking material to deliver liquid fuels or to remove

products, such as water. While Yamada describes porous wicking materials to remove water, Yamada explicitly teaches that “the materials for the wicks [to transport liquids] are not allowed to be conductors because conductors possibly form a cause for a short circuit.” Col. 47 lines 10-15 (*emphasis added*); see also, Col. 38 lines 8-9 and 67-68; and Col. 39 lines 21-25.

In this regard, Yamada teaches away from the subject matter of amended Claim 1 that relates to an electroconductive element that comprises an electrically conductive porous liquid distribution media. In the context of the architecture of the electrochemical cell recited in Claim 1, the liquid distribution media is preferably conductive to enable proper operation of the fuel cell and in certain aspects would be entirely inoperable if the liquid distribution media was not electrically conductive.

Claim 1 further recites an impermeable electrically conductive element. In contrast, the Miyazawa reference suggests the separator plate can be porous (e.g., Paragraph 30). Similarly, the Yamada reference contains various descriptions of designing porosity for the separator plate to maintain separation between liquid fuel side (anode) and oxidizing side (cathode). Such teachings are entirely inapplicable to the claimed invention, because the separator element must be impermeable.

As such, Applicants submit that independent Claim 1 and the claims which rely upon it, namely Claims 2-3, 5-21, and 23, are not rendered obvious by Miyazawa in view of the Yamada reference, and Applicants respectfully request reconsideration and allowance thereof.

**REJECTION UNDER 35 U.S.C. § 103 OVER MIYAZAWA IN VIEW OF DAVIS**

Claim 22 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Miyazawa in view of Davis (U.S. Pat. Publ. No. 2002/0001743) (hereinafter the "Davis" reference). This rejection is respectfully traversed.

Claim 22 depends upon amended independent Claim 1, which now recites a limitation that an electrically conductive porous fluid distribution layer has an average pore size that is larger than an average pore size of the liquid distribution media. For the reasons stated above, the Miyazawa reference does not suggest a liquid distribution media that has an average pore size that is smaller than an average pore size of the fluid distribution layer. Additionally, Miyazawa has no suggestion or motivation to arrive at an electrically conductive liquid distribution media. The Davis reference does not account for these deficiencies. Hence, the Miyazawa reference either standing alone or in combination with the Davis reference, fails to disclose, suggest, or motivate one of skill in the art to arrive at the invention in Claim 22. As such, Applicants respectfully request reconsideration of Claim 22 and withdrawal of the rejection.

**CONCLUSION**

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the

Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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